

What is claimed is:

1 1. A method for detecting presence of a user at a
2 telecommunication terminal, comprising the steps of:
3 testing acoustic paths communicating audio
4 information from and back to the telecommunication terminal;
5 and
6 determining the presence of the user based on
7 changes in the acoustic paths.

1 2. The method of claim 1 wherein the step of
2 testing comprises the steps of forming a model of the
3 acoustic paths;
4 detecting modifications in the acoustic paths to
5 update the model of the acoustic paths; and
 the step of determining comprises the step of using the
detected modifications to determine changes in the acoustic
paths.

1 3. The method of claim 2 wherein the step of
2 detecting comprises the steps of applying audio information
3 transmitted from the telecommunication terminal to the
4 model of the acoustic paths;
5 receiving the transmitted audio information back by
6 the telecommunication terminal via the acoustic paths;
7 determining a difference between an output of the
8 model of acoustic paths from the received audio information;
9 and
10 calculating a correction to the model of the acoustic
11 paths using the difference and transmitted audio information.

1 4. The method of claim 1 wherein the audio
2 information is at one of within human hearing, above human
3 hearing and below human hearing.

1 5. The method of claim 1 wherein the step of
2 determining the presence comprises the steps of developing
3 the model of the acoustic paths with the user presence and
4 not presence at the telecommunication terminal; and
5 calculating a threshold of changes in the model of
6 the acoustic paths that represents the presence or non-
7 presence of the user at the telecommunication terminal.

1 6. The method of claim 1 further comprises the
2 step of performing telecommunication operations by the
3 telecommunication terminal in responsive to the presence or
4 non-presence of the user at the telecommunication terminal.

1 7. The method of claim 6 wherein the
2 telecommunication operations are send-all-calls.

1 8. The method of claim 1 further comprises the
2 steps of controlling the telecommunication terminal by a
3 telecommunication switching system;
4 signaling the telecommunication switching system
5 by the telecommunication terminal of the presence or non-
6 presence of the user at the telecommunication terminal; and
7 performing telecommunication operations by the
8 telecommunication switching system in response to the
9 presence or non-presence of user at the telecommunication
10 terminal.

1 9. An apparatus for detecting presence of a user at
2 a telecommunication terminal, comprising:
3 a transmitter for transmitting audio information;
4 a receiver for receiving the transmitted audio
5 information via acoustic paths; .
6 a model of the acoustic paths for using the audio
7 information before transmission and for producing an audio
8 output;
9 a comparator for determining a difference between
10 the audio output and received audio information;
11 a modifier for iteratively generating modifications for
12 the model of the acoustic paths in responsive to the
13 difference and audio information before transmission; and
14 a controller responsive to the modifications for
15 detecting the presence or non-presence of the user at the
16 telecommunication terminal.

1 10. The apparatus of claim 9 wherein the controller
2 further configured for determining modifications when the
3 user is presence and when the user is not presence; and
4 the controller calculating a threshold from the
5 determined modifications indicating the presence or non-
6 presence of the user.

1 11. The apparatus of claim 9 wherein the audio
2 information is at one of within human hearing, above human
3 hearing and below human hearing.

1 12. The apparatus of claim 11 wherein the type of
2 the audio information is controlled by the controller.

1 13. An apparatus for detecting presence of a user
2 at a telecommunication terminal, comprising:
3 an echo canceller for canceling echoes caused by
4 acoustic paths to audio information from and back to the
5 echo canceller; and
6 a controller responsive to changes in the echo
7 canceller for determining the presence and non-presence of
8 the user at the telecommunication terminal.

1 14. The apparatus of claim 13 wherein the audio
2 information is at one of within human hearing, above human
3 hearing and below human hearing.

1 15. The apparatus of claim 14 wherein the type of
2 the audio information is controlled by the controller.

1 16. The apparatus of claim 13 wherein the echo
2 canceller comprises a model of the acoustic paths;
3 a modifier for generating modifications to the model
4 based on changes to the acoustic paths; and
5 the controller responsive to the generated
6 modifications for determining the presence or non-presence
7 of the user at the telecommunication terminal.

1 17. The apparatus of claim 16 wherein the modifier
2 responsive to a difference in an output of the model of the
3 acoustic paths to audio information before transmission from
4 the echo canceller and received audio information via the
5 acoustic paths for generating the modification based on the

6 difference and the audio information before transmission.

1 18. An apparatus for determining presence of a

2 user at a telecommunication terminal, comprising:

3 an echo detector for detecting echoes caused by

4 acoustic paths to audio information from and back to the

5 echo detector; and

6 a controller responsive to changes in the echo

7 detector for determining the presence and non-presence of

8 the user at the telecommunication terminal.

1 19. The apparatus of claim 18 wherein the audio

2 information is at one of within human hearing, above human

3 hearing and below human hearing.

1 20. The apparatus of claim 19 wherein the type of

2 the audio information is controlled by the controller.

1 21. The apparatus of claim 18 wherein the echo

2 detector comprises a model of the acoustic paths;

3 a modifier for generating modifications to the model

4 based on changes to the acoustic paths; and

5 the controller responsive to the generated

6 modifications for determining the presence or non-presence

7 of the user at the telecommunication terminal.

1 22. The apparatus of claim 21 wherein the modifier

2 responsive to a difference in an output of the model of the

3 acoustic paths to audio information before transmission from

4 the echo detector and received audio information via the

5 acoustic paths for generating the modification based on the
6 difference and the audio information before transmission.

1 23. A method detecting presence of a user at a
2 telecommunication terminal, comprising the steps of:

3 testing for human heat being radiated to the
4 telecommunication terminal; and

5 determining the presence of the user based on
6 changes in the radiated human heat.

1 24. The method of claim 23 wherein the step of
2 determining the presence comprises the steps of detecting
3 human heat with the user presence and not presence at the
4 telecommunication terminal; and

5 calculating a threshold of changes in the human
6 that represent the presence or non-presence of the user at
7 the telecommunication terminal.

1 25. The method of claim 24 further comprises the
2 step of performing telecommunication operations by the
3 telecommunication terminal in responsive to the presence or
4 non-presence of the user at the telecommunication terminal.

1 26. The method of claim 25 wherein the
2 telecommunication operations are send-all-calls.

1 27. The method of claim 24 further comprises the
2 steps of controlling the telecommunication terminal by a
3 telecommunication switching system;
4 signaling the telecommunication switching system

5 by the telecommunication terminal of the presence or non-
6 presence of the user at the telecommunication terminal; and
7 performing telecommunication operations by the
8 telecommunication switching system in response to the
9 presence or non-presence of user at the telecommunication
10 terminal.

1 28. An apparatus for detecting presence of a user
2 at a telecommunication terminal, comprising:
3 a heat sensor for detecting human heat; and
4 a controller responsive to changes in the human
5 heat for determining the presence and non-presence of the
6 user at the telecommunication terminal.

1 29. The apparatus of claim 28 wherein the
2 controller further configured for determining changes in
3 human heat when the user is presence and when the user is
4 not presence; and
5 the controller calculating a threshold from the
6 determined changes indicating the presence or non-
7 presence of the user.

1 30. A processor-readable medium for detecting
2 presence of a user at a telecommunication terminal,
3 comprising processor-executable instructions configured for:
4 testing acoustic paths communicating audio
5 information from and back to the telecommunication terminal;
6 and
7 determining the presence of the user based on
8 changes in the acoustic paths.

1 31. The processor-readable medium of claim 30
2 wherein the testing comprises forming a model of the
3 acoustic paths;
4 detecting modifications in the acoustic paths to
5 update the model of the acoustic paths; and
6 the determining comprises using the detected
7 modifications to determine changes in the acoustic paths.

1 32. The processor-readable medium of claim 31
2 wherein the detecting comprises applying audio information
3 transmitted from the telecommunication terminal to the
4 model of the acoustic paths;
5 receiving the transmitted audio information back by
6 the telecommunication terminal via the acoustic paths;
7 determining a difference between an output of the
8 model of acoustic paths from the received audio information;
9 and
10 calculating a correction to the model of the acoustic
11 paths using the difference and transmitted audio information.

1 33. The processor-readable medium of claim 30
2 wherein the audio information is at one of within human
3 hearing, above human hearing and below human hearing.

1 34. The processor-readable medium of claim 30
2 wherein the determining the presence comprises developing
3 the model of the acoustic paths with the user presence and
4 not presence at the telecommunication terminal; and
5 calculating a threshold of changes in the model of
6 the acoustic paths that represents the presence or non-

7 presence of the user at the telecommunication terminal.

1 35. The processor-readable medium of claim 30
2 further comprises the performing telecommunication
3 operations by the telecommunication terminal in responsive
4 to the presence or non-presence of the user at the
5 telecommunication terminal.

1 36. The processor-readable medium of claim 35
2 wherein the telecommunication operations are send-all-calls.

1 37. The processor-readable medium of claim 30
2 further controlling the telecommunication terminal by a
3 telecommunication switching system;
4 signaling the telecommunication switching system
5 by the telecommunication terminal of the presence or non-
6 presence of the user at the telecommunication terminal; and
7 performing telecommunication operations by the
8 telecommunication switching system in response to the
9 presence or non-presence of user at the telecommunication
10 terminal.